

Claims:

2 1. A method for assigning Orthogonal codes in a code
3 division multiple access network, comprising:
4 determining that there is a need to reuse a code within
5 a defined cell area; and
6 determining an optimal mobile station whose Orthogonal
7 code is to be reused.

1 2. The method of claim 1 further comprising defining a
2 plurality of zones.

1 3. The method of claim 2 further comprising statically
2 building a ranked list of zones according to interference
3 there between.

1 4. The method of claim 2 further comprising statically
2 building a ranked list of zones according to angular
3 separation.

1 5. The method of claim 2 further comprising defining a
2 ranked list of zones according to interference between zones
3 and according to angular separation between zones.

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1 6. The method of claim 5 wherein zones in which side
2 lobes are present for a primary lobe in a zone in which the
3 reused code is to be assigned are eliminated from the ranked
4 list.

1 7. The method of claim 6 wherein the mobile station is
2 selected by considering, at least in part, whether the mobile
3 station is a fixed wireless access user.

1 8. The method of claim 6 wherein the mobile station is
2 selected by considering, at least in part, its speed.

1 9. The method of claim 6 wherein the mobile station is
2 selected by considering, at least in part, its direction of
3 travel.

1 10. The method of claim 6 wherein the mobile station is
2 selected by considering, at least in part, its location.

1 11. The method of claim 6 wherein the mobile station is
2 selected by considering, at least in part, its call duration
3 length.

1 12. The method of claim 6 wherein the mobile station is
2 selected by considering, at least in part, its frame error
3 rate.

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1 13. The method of claim 6 wherein the mobile station is
2 selected by considering, at least in part, its power
3 consumption level.

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1 14. The method of claim 6 wherein the mobile station is
2 selected by considering, at least in part, a known
3 interference between the mobile station and the mobile
4 station to whom the code is to be reassigned.

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1 15. The method of claim 6 wherein the mobile station is
2 selected by considering, at least in part, a correlation of
3 its time and speed.

1 16. The method of claim 6 wherein the mobile station is
2 selected by considering, at least in part, whether a
3 hysteresis is in effect for the user.

1 17. The method of claim 6 wherein the mobile station is
2 selected by considering, at least in part, according to
3 whether the call is a data or voice call.

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1 18. The method of claim 6 wherein the mobile station is
2 selected by considering, at least in part, whether, if the
3 call is a data call, whether it is bursty or continuous.

1 19. The method of claim 1 wherein the need to reuse an
2 Orthogonal code occurs because of a determination that a
3 collision is eminent between the two mobile stations using
4 the same Orthogonal code.

1 20. The method of claim 19 wherein the need is
2 determined prior to the occurrence of an actual collision.

1 21. The method of claim 19 wherein the determination is
2 made by considering whether the frame error rate is
3 increasing.

1 22. The method of claim 19 wherein the determination is
2 made by considering whether the power usage is increasing.

1 23. The method of claim 19 wherein the determination is
2 made by considering whether there is a significant change in
3 speed.

1 24. The method of claim 19 wherein the determination is
2 made by considering whether there is a significant change in
3 direction.

1 25. The method of claim 19 wherein the determination is
2 made by considering whether a handoff is occurring to a non-
3 compatible zone.

1 26. The method of claim 19 wherein the determination is
2 made by considering whether the mobile station is moving
3 towards the cell center.

1 27. The method of claim 19 wherein the determination is
2 made by considering whether the mobile station is too close
3 to the cell center.

1 28. The method of claim 19 wherein the determination is
2 made by considering whether the signal quality falls below a
3 specified threshold.

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1 29. A method for assigning an Orthogonal code in a code
2 division multiple access network, comprising:

3 determining that a need exists to reuse an Orthogonal
4 code that is already assigned to a mobile station for
5 creating a communication channel;

6 evaluating at least one of zone interference, zone
7 separation and mobile station characteristics for those
8 mobile stations that already have been assigned Orthogonal
9 code and selecting an Orthogonal code to be reused and
10 assigning the selected Orthogonal code to a mobile station
11 that is requiring an Orthogonal code.

1 30. The method of claim 29, wherein the candidate donor
2 mobile station's characteristics that are evaluated include
3 at least one of whether the candidate donor mobile station is
4 a fixed wireless access user, its speed, its direction, the
5 candidate donor location, the candidate donor's call
6 duration, the candidate donor's frame error rate, the
7 candidate donor's power consumption, whether the candidate
8 donor is transmitting data or voice, if the candidate donor
9 is transmitting data, whether it is bursty or continuous
10 data.

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1 31. The method of claim 28, wherein selecting a donor
2 mobile station includes selecting an Orthogonal code for a
3 mobile station whose location is in a zone that has
4 significant angular separation from the zone in which a
5 requesting mobile station is located when the requesting
6 mobile station is the one needing to reuse an Orthogonal
7 code.

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1 32. The method of claim 28, further comprising
2 monitoring the Orthogonal code mobile station characteristics
3 for the two mobile stations using the same Orthogonal code to
4 determine whether a likelihood of a collision is increasing
5 beyond a specified threshold.

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1 33. A base station transceiver system for assigning
2 Orthogonal codes to create communication channels in a code
3 division multiple access network, comprising circuitry for
4 performing routine base station transceiver system
5 operations; and
6 logic circuitry for selecting an Orthogonal code for
7 reuse from a mobile station located in a cell portion
8 according to the location of the mobile station and specified
9 mobile station characteristics.

1 34. The base station transceiver system of claim 34, ~~||~~
2 wherein the cell portion that is selected for initially
3 evaluating mobile stations for donating their Orthogonal code
4 for reuse includes evaluating the angular separation between
5 the cell portion and a cell portion in which the code is to
6 be reused.